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30 September 1968

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**MEMORANDUM FOR:** Chief, Information Processing Staff/OPPB

**SUBJECT :** Draft of NBS Instructions for Application  
of the Federal Standard ASCII Code

**REFERENCE :** a. C/IPS's Memo dtd 13 Sep 68  
b. NBS Memo dtd 4 Sep 68

1. One of the problems that we see with the draft is the variety of interpretation that may be drawn from its language, depending upon the reader's role in the ADP world. From the standards enforcement viewpoint, there are references to "Public Law 89-306," the "President," and "1 July 1969"--when "all computers brought into the Federal Government inventory must have the capability to use ASCII, etc."--which imply heavy handed enforcement. From the operations viewpoint, there is considerable language describing "evolutionary transition," and the authorization of departments and agencies to "waive application of these guidelines" in certain situations, from which one might assume unpressured implementation. All of which leads one to wonder when and with what force application of these instructions is appropriate. In addition to these differences in policy viewpoint, it has been quite evident from technical and management discussions generated by the draft that ambiguous definitions are being drawn from some of the technical language in the paper.

2. In 1964, the IBM/360 was offered with the internal options of EBCDIC or ASCII-8 (IBM's own transliteration of seven bit ASCII to eight bit bytes). So far as we can determine, no IBM 360's have been delivered which internally use ASCII-8. Because no standard eight bit code has been specified and approved by USASI (United States of America Standards Institute), EBCDIC has become the de facto industry standard for the internal logical operation of computer systems. USASI has not approved a transliteration algorithm which would describe how seven bit byte ASCII appears logically within an eight bit byte computer. This information is required for the development

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of software and programs which manipulate bits rather than characters. With this in mind, I am not sure what is meant in paragraph 7 which states that all computers brought into the government "after 1 July 1968 must have the capability to use ASCII, etc." Does this mean read in or write out only, or does it also imply a standard ASCII internal machine logic which can be used for software development and the special application programs described above? If it means the latter--and this interpretation can easily be made--the impact will be severe on users and manufacturers. The number of manufacturers who will be prepared to deliver equipment which meets this specification by 1 July 1969 is not clear now and this may force some relaxation of the proposed deadline.

3. The ASCII standard does not appear to present any serious problems in the interchange of information. Programs can be used to convert the input or output of a computer from EBCDIC to ASCII or ASCII to EBCDIC. In electrical transmission, the computer controls for communication lines provide automatic conversion of the eight bit bytes in the computer to the seven bit bytes for transmission, and vice versa. However, I believe that there are many subtle technical problems concerned with the data files, special programs, software and internal computer logic which will need to be solved before the Federal ADP standards program can reach the ultimate objective of applying ASCII based code, media, and sequence standards to internal files. These problems will take a long time to resolve.

/s/ Charles A. Briggs  
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